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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/528,387

09/21/2005

Lesley Ann Key

608-452

4683

23117 7590 10/20/2008  
NIXON & VANDERHYE, PC  
901 NORTH GLEBE ROAD, 11TH FLOOR  
ARLINGTON, VA 22203

EXAMINER

OH, TAYLOR V

ART UNIT

PAPER NUMBER

1625

MAIL DATE

DELIVERY MODE

10/20/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/528,387	<b>Applicant(s)</b> KEY ET AL.	
	<b>Examiner</b> Taylor Victor Oh	<b>Art Unit</b> 1625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 11-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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The previous rejection base on Sunley et al (Catalysis Today 58 (2000) 293-307) has been prematurely withdrawn. In order to correct this inadvertent mistake , the examiner has decided to reapply the rejection based on the prior art Sunley et al against claims 1-9 and 11-16 ; Applicant's arguments with respect to claims 1-9 and 11-16 have been considered but are moot in view of the new ground(s) of rejection.

**The Status of Claims:**

Claims 1-9, and 11-16 are pending.

Claims 1-9, and 11-16 are rejected.

**DETAILED ACTION**

**Priority**

1. It is noted that this application is a 371 of PCT/GB03/03834 (09/03/2003); the examiner has acknowledged that applicants have filed foreign priority documents ,United Kingdom 0221800.6 (09/19/2002).

**Drawings**

2. None.

***Claim Rejections - 35 USC § 103***

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims rejected under 35 U.S.C. 103(a) as being unpatentable over \*\*\*.

3. Claims 1-9, and 11-16 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Sunley et al (Catalysis Today 58 (2000) 293-307).

Sunley et al describes the followings (see abstract page ):

Methanol carbonylation to acetic acid is catalysed with high rates at low water concentrations using an iridium/iodide based catalyst. The catalyst system exhibits high stability allowing a wide range of process conditions and compositions to be accessed without catalyst precipitation. Two distinct classes of promoters have been identified for the reaction: simple iodide complexes of zinc, cadmium, mercury, indium and gallium and carbonyl complexes of tungsten, rhenium, ruthenium and osmium. The promoters exhibit a unique synergy with iodide salts, such as lithium iodide, under low water conditions. A rate maximum exists at commercially attractive low water conditions, and optimisation of the process parameters gives acetic acid with a selectivity in excess of 99% based upon methanol. The levels of liquid by-products formed are a significant improvement over that achieved with the conventional high water rhodium based catalyst system used in the Monsanto process and the quality of the product obtained under low water concentrations is exceptional. The Cativa<sup>®</sup> process has now been successfully commercialised on three world scale plants.

The following table 2 describes the various additives for iridium catalysed methanol carbonylation as shown below (see page 299, table 2 ).

Table 2

Baich autoclave data: effect of various additives on rate for iridium catalysed methanol carbonylation<sup>a</sup>

Experiment	Additive	Additive/Ir molar ratio	Carbonylation rate (mol dm <sup>-3</sup> h <sup>-1</sup> )
1	None	~	3.2
2	LiI	1:1	4.3
3	Bu <sub>4</sub> NI	1:1	2.7
4	Ru(CO) <sub>5</sub> I <sub>2</sub>	5:1	21.6
5	Os(CO) <sub>4</sub> I <sub>2</sub>	5:1	18.6
6	Rh(CO) <sub>2</sub> Cl	5:1	9.7
7	W(CO) <sub>6</sub>	5:1	9.9
8	ZnI <sub>2</sub>	5:1	11.5
9	CdI <sub>2</sub>	5:1	14.7
10	HgI <sub>2</sub>	5:1	11.8
11	GaI <sub>3</sub>	5:1	12.7
12	InI <sub>3</sub>	5:1	14.8
13	InI <sub>3</sub> /Ru(CO) <sub>5</sub> I <sub>2</sub>	5:1:1	19.4
14	ZnI <sub>2</sub> /Ru(CO) <sub>5</sub> I <sub>2</sub>	5:1:1	13.1
15	Ru(CO) <sub>5</sub> I <sub>2</sub>	Control — no Ir <sup>b</sup>	0 <sup>c</sup>

<sup>a</sup> Reaction conditions: 190°C; 33 barg and 1500 rpm, autoclave charge: methyl acetate (648 mmol); water (943 mmol); acetic acid (1258 mmol); methyl iodide (62 mmol) and H<sub>2</sub>IrCl<sub>6</sub> (1.56 mmol) plus additive as required, carbonylation rate (mol dm<sup>-3</sup> h<sup>-1</sup>), measured at 50% conversion of methyl acetate.

<sup>b</sup> Control experiment conducted in the absence of iridium; ruthenium complex amount used as in run 4.

<sup>c</sup> No CO uptake observed.

Furthermore, the concentration of the iridium catalyst composition is in the range of 1600 to 3240 ppm (see page 304 , paragraph 7.2.1), whereas that of water in the liquid reaction composition is in the range of 2.2 to 7.1 % by w/w. (see page 305 ,table 4).

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However, the instant invention differs from the prior art in that the high ratio of the concentration of promoter to iridium such as (2 to 15 : 1) is not exemplified.

With respect to the high ratio of the concentration of promoter to iridium (2 to 15 : 1), the prior art does teach that increasing the promoter to iridium molar ratio will ensure a two or three-fold increase in reaction rate, which can be achieved with indium or ruthenium as shown in fig 3 (see page 300). Therefore, it would have been obvious to the skilled artisan in the art to be motivated to increase the molar ratio of promoter to iridium in the prior art process so as to improve the rate for the carbonylation process. This is because the skilled artisan in the art would expect such a modification to be feasible and successful within the purview of the skilled artisan in the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Taylor Victor Oh whose telephone number is 571-272-0689. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Andres can be reached on 571-272-0867. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Taylor Victor Oh, MSD,LAC  
Primary Examiner  
Art Unit :1625

/Taylor Victor Oh/

Primary Examiner, Art Unit 1625

10/15/08